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EPA

Permeable Reactive Barriers Action Team

RTDF

Remediation Technologies Development Forum

RTDF Action Teams

Lasagna™ Partnership

Bioremediation Consortium

IINERT Soil-Metals Action Team

Sediments Remediation Action Team

***In Situ* Flushing Action Team**

Phytoremediation of Organics Action Team

What Is the Permeable Reactive Barriers Action Team?

The Permeable Reactive Barriers Action Team was established in March 1995 as one of the seven Action Teams under the Remediation Technologies Development Forum (RTDF). The RTDF was created by the U.S. Environmental Protection Agency (EPA) in 1992 to foster collaboration between the public and private sectors in finding innovative solutions to mutual hazardous waste problems. The Action Team has met to discuss ongoing research, to identify development needs not currently being addressed, to identify and promote the funding of priority research needs to advance the acceptance of the technology, and to develop plans for collaborative field studies.

What Is the Action Team's Mission?

The mission of the Permeable Reactive Barriers Action Team is to accelerate the development of cost-effective permeable barrier technologies for mitigating chlorinated solvents, metals, radionuclides, and other pollutants in ground water. The Action Team will undertake the development and evaluation efforts needed to achieve public and regulatory acceptance of this technology. The efforts focus on:

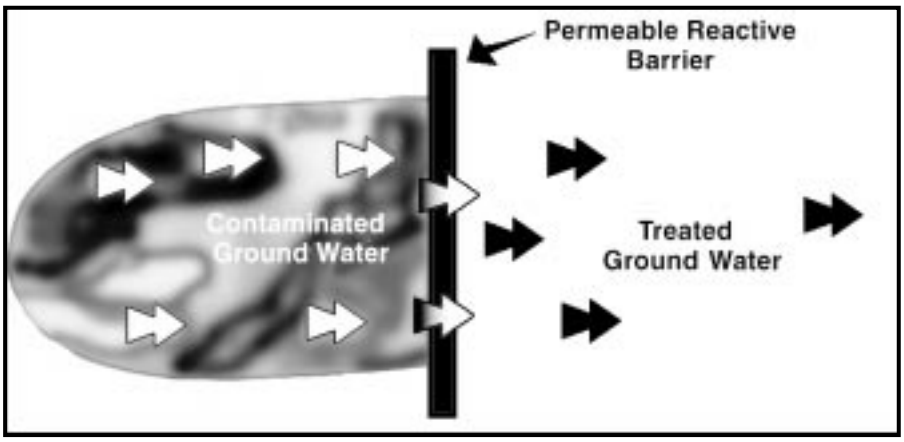
- Defining the hydraulics, geochemistry, and reactions that occur in the media and aquifers
- Demonstrations that validate the technology's effectiveness
- Protocols, guidance, and issue papers for design and effective implementation
- Effective emplacement techniques and configurations (engineering design and constructability)
- Economic analysis of treatment cost
- Public/regulatory acceptance of the technology

What Is a Permeable Reactive Barrier?

A permeable reactive barrier is a passive *in situ* treatment zone of reactive material that degrades or immobilizes contaminants as ground water flows through it. Permeable treatment walls are installed as permanent, semi-permanent, or replaceable units across the flow path of a contaminant plume. Natural gradients transport contaminants through strategically placed treatment media. The media degrade, sorb, precipitate, or remove chlorinated solvents, metals, radionuclides, and other pollutants. These barriers may contain reactants for degrading volatile organics, chelators for immobilizing metals, nutrients and oxygen for microorganisms to enhance bioremediation, or other agents.

Degradation barriers facilitate reactions that break down contaminants in the plume into harmless byproducts. Precipitation barriers react with contaminants to form insoluble products that remain in the barrier as ground water continues to flow through. Sorption barriers adsorb or chelate contaminants.

Conceptual Configuration of Permeable Barrier System



What Activities Are Planned?

Many Permeable Reactive Barriers Action Team members play active roles in research, development, technology transfer, and technical assistance for field sites throughout the world. The Air Force has asked the Action Team to participate in a study entitled "Catalytic *In Situ* Treatment of Chlorinated Solvents," to be conducted at Dover Air Force Base, Delaware. This study is being coordinated by the Air Force's Armstrong Laboratory under the Department of Defense's Strategic Environmental Research and Development Program (SERDP). Several members of the Action Team are assisting with the design of this study, and field work is expected to begin in 1997. The Action Team also is becoming increasingly involved in research and technology evaluation activities at the U.S. Coast Guard site near Elizabeth City, North Carolina. This research site, originally developed by researchers from EPA's National Risk Management Research Laboratory (NRMRL), is now being utilized by other groups within the Action Team to evaluate long-term performance monitoring issues associated with permeable reactive barriers.

Who Are the Action Team Members?

Battelle Memorial Institute
Cercona
Clean Sites
Dow
DuPont
EMCON
EnviroMetal Technologies
General Electric
Geomatrix
ICI Americas
Monsanto
Zeneca

U.S. Air Force
U.S. Army Corps of Engineers
U.S. Department of Energy
U.S. Environmental Protection Agency
U.S. Geological Survey
U.S. Naval Facilities Engineering Command

New Mexico Tech
University of Waterloo
State University of New York at Buffalo

RTDF

Remediation Technologies Development Forum

Would You Like More Information?

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Industry Co-Chair to be named

For information on the RTDF or other Action Teams, please visit the RTDF World Wide Web site at www.rtdf.org or contact:

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